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EXAMINER	
KOLKER, DANIEL E	
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1649	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/517,653	WEST ET AL.	
	Examiner	Art Unit	
	DANIEL KOLKER	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/18/08, 2/6/08*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The remarks and amendments filed 18 January 2008 and 6 February 2008 have been entered. Claims 18 – 27 have been canceled by the supplemental amendment of 6 February 2008; claims 1 – 17 are pending and under examination.

Withdrawn Rejections and Objections

2. The following rejections and objections set forth in the previous office action are withdrawn:

A. Any rejection of a claim now canceled is moot.

Maintained Rejections

Claim Rejections - 35 USC §§ 102 and 103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 - 2, 4, and 13 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Penkowa (2002. Journal of Comparative Neurology 444(2):174-189), as evidenced by Sigma M9542 and Garrett (2000. The Prostate 43:125-135).

This rejection stands for the reasons previously made of record and explained in further detail below. Claim 1 as amended is drawn to "[a] method of stimulating neuronal regenerative growth or repair comprising exposing a target neuron or neuronal area to a solution of the metallothionein isoform MT-IIA." As set forth previously, Penkowa teaches administering metallothionein 2 (also called MT-2 in the reference) to mice. At p. 176 first paragraph the reference teaches administering the compound to normal mice, some of which had been treated with the compound 6-AN which damages the brain (see p. 175 second column). As set forth in the previous office action, administration of MT-2 decreased the number of dying neurons in the brains of those subjects that had 6-AN-induced brain damage.

Penkowa is silent as to whether "MT-IIA" as recited was used, or whether some other isoform was used. The reference teaches that Zn-MT-2 was purchased from Sigma as catalog number M9542. The printout from Sigma mailed with the previous office action indicates that this is rabbit MT-2. Neither the Penkowa nor the Sigma references disclose whether this MT-2 is MT-2A. However, the reference by Garrett teaches that in humans, MT-2A is the only active MT-2 isoform (p. 126 first complete paragraph). Thus it appears that the MT-2 administered by Penkowa is in fact MT-2A, as recited in claim 1. Therefore, claim 1 is anticipated by, or in the alternative obvious over, Penkowa. See MPEP §§ 2131.02 and 2144.08.

Applicant argues extensively, at pp. 8 - 15 of the remarks filed 18 January 2008, that applicant has discovered a different mechanism by which metallothionein acts, and this mechanism is not disclosed by Penkowa. Applicant makes several points, including:

1) Penkowa teaches that administration of metallothionein administered outside of the brain leads to protection but does not indicate any effect on regeneration of neurons, as now claimed.

2) The model used by Penkowa "could not have any way been used and applied to demonstrate the ability of metallothionein to promote regenerative neuronal growth by a direct action of metallothionein on neurons" (remarks, p. 10).

3) There is no evidence in Penkowa that metallothionein reached the brain at all, or if it did whether it was in the appropriate concentration "shown by the present inventors to be important in exerting a direct effect on neuronal regeneration" (remarks, p. 11).

4) Regeneration of neurons occurs 4-7 days after injury, whereas death of neurons occurs 1-2 days, and the two processes are different.

Each of the above will be addressed in turn. First, the examiner notes that applicant did not refute or contest the examiner's determination that MT-2 taught by Penkowa is either the same as, or an obvious variant of, MT-2A as recited in the claims. The examiner set forth a *prima facie* case as to why the reference by Penkowa either anticipates or renders obvious a method of administering this particular form (MT-2A), even though Penkowa only explicitly teaches administration of MT-2.

Turning first to 1), it is first important to note that claim 1 is not limited to inducing regeneration. The claim encompasses, in the alternative, "[a] method of stimulating regenerative growth or repair…" [emphasis added]. Thus even assuming, for the sake of argument alone that the prior art reference by Penkowa did not anticipate a method of stimulating regenerative growth of neurons, it would still reasonably apply to the other alternative, stimulating *repair* of neurons. However, the reference by Penkowa teaches every limitation of claim 1, either explicitly or implicitly (with the exception of whether the MT-2 administered was MT-IIA; as noted above applicant did not traverse the examiner's determination that Penkowa either anticipates or renders obvious administration of this particular isoform). Claim 1 as written requires a single step: "exposing a target neuron or neuronal area to a solution of the metallothionein isoform MT-IIA." The claim does not require that the neuron or neuronal area be directly contacted (e.g., by ICV administration) with MT-IIA. The specification discloses that intraperitoneal administration is sufficient to achieve the requisite effect; see p. 2 lines 30 – 35; see also claim 13 which recites intraperitoneal administration. Penkowa administered the MT-II to patients with damaged neurons via the intraperitoneal route, which anticipates every step recited in claims 1 and 13 and either anticipates or renders obvious use of the MT-IIA isoform recited in claim 1.

While Penkowa is silent as to whether the steps of "stimulating neuronal regenerative growth or repair" will happen, simply because applicant has discovered a novel mechanism of an old method does not mean that the old method is patentable. This effect "stimulating

neuronal regenerative growth or repair" will necessarily occur when the artisan carries out the steps listed in claim 1. Note that when a prior art reference teaches a method of using a product but is silent as to the effects inherent in the use of the product, rejections under 35 USC 102 and 103 are appropriate. See MPEP § 2112(III). Here, the reference by Penkowa is silent as to whether regeneration is stimulated. However, since the reference teaches administration of MT-II and subsequent neuronal protection, it anticipates or renders obvious claim 1. The reference teaches a method of administering the same product (here, MT-II or MT-IIA; again, applicant did not traverse the examiner's determination that they are the same or obvious variants) to the same patient population (while no population is explicitly recited in claim 1, the language of the preamble implies that patients with neuronal damage are included; see also specification p. 3 lines 10 – 11 which indicate that neurons that have undergone trauma are to be treated) by the same route (note intraperitoneal administration is appropriate; see p. 2 and claim 13). Thus Penkowa anticipates or renders obvious claim 1.

Claim 2 is rejected as Penkowa states that Zn-MT-2 reaches the brain; see p. 186, first column. Claim 4 is rejected as it recites a product-by-process limitation ("wherein said MT-IIA is produced by chemical synthesis or by production in genetically manipulated cells or organisms") which does not distinguish the claimed invention over the prior art. There is no evidence of record that the product made by the processes recited in claim 4 are any different than those made by other means. Claim 13 is rejected as Penkowa teaches intraperitoneal injection (see p. 184, end of first column). Applicant did not separately traverse the examiner's determination that the specific limitations recited in these claims are not anticipated by Penkowa.

With respect to 2) above, whether or not Penkowa teaches the mechanism that applicant implies he has discovered is not relevant to this rejection. The invention as claimed is not a mechanism of action (i.e. direct vs. indirect action of metallothionein), but a method of administering a product. Penkowa teaches or renders obvious every limitation in the claims, either explicitly or inherently, since the reference teaches administration of the same product (or a patentably indistinct variant) to the same patient population by the same route.

With respect to 3) above, applicant argues that there is no evidence in Penkowa that metallothionein reached the brain at all, or any particular concentration was present. This limitation is not recited in the claims subject to this rejection. Claims 1 – 2, 4, and 13 only require the step of administering MT-IIA. While claims 6 – 7 recite specific concentrations, these are concentrations of the solution prior to administration. The claims were rejected (and

remain rejected; see below) under 35 USC 103(a). Note that these claims do not require that MT-IIA be administered by any particular route, and do not require any steps of determining the concentration of MT-IIA within the brain, for example.

With respect to 4), it is noted that none of the claims require administration for any degree of time, nor do they require separate steps such as determining the degree of regeneration (if any) at specific times following injection. The time frame over which the drug is active is not claimed, and thus arguments as to applicant's proposed time frame for the mechanism of action are not germane.

For at least the above reasons, the rejection over Penkowa stands.

4. Claims 1 – 2, 4, 13, and 17 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Giralt (2002. Experimental Neurology 173:114-128, available online 25 February 2002).

This rejection is maintained for the reasons previously made of record and explained in more detail herein. Briefly, Giralt teaches administration Zn-MT-2 to mice that had received a head injury, recited in claim 17. As set forth in the previous office action and above, MT-2 administered by Giralt is either the same as, or an obvious variant of, MT-IIA as recited in the claims.

Applicant states on p. 9 of the remarks that Giralt cannot anticipate the instant claims as it does not teach measuring neurons, but rather teaches measuring glia. Applicant is not claiming measuring neurons or glia; applicant is claiming a method of treating head injury (claim 17) or stimulating neuronal regenerative growth or repair (claim 1) by administering MT-IIA. The only step is administration/exposing the target region to MT-IIA. No other starting materials are required, and no other steps are required. The reference by Giralt teaches every step, including administration via i.p. injection, as encompassed by claim 1 and recited in claim 13. As set forth in the rejection above over Penkowa, the effects recited in claim 1 will occur, as Giralt teaches every step in the method. The reasons why claims 2 and 4 are also included in this rejection have been set forth in the previous office action; applicant did not separately traverse the examiner's determination that the reference by Giralt anticipates these claims.

Applicant did not separately traverse the examiner's determination of anticipation/obviousness over Giralt beyond the reasons set forth in discussion of Penkowa. It

is believed that all pertinent remarks have been addressed above in the examiner's discussion of Penkowa.

5. Claims 1 – 2, 4, and 6 – 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Penkowa (2002. Journal of Comparative Neurology 444(2):174-189).

The reasons why claims 1 – 2, 4, and 13 stand rejected as anticipated by or obvious over Penkowa are set forth above. While the reference teaches administering a total of 17.5 ug Zn-MT-2 in saline per day, divided into three separate doses (p. 176 first paragraph), Penkowa does not explicitly teach that the solution has a concentration of "up to about 5 ug/ml" as recited in claim 6 or "about 5 ug/ml" as recited in claim 7. Additionally, Penkowa teaches that endogenous MT-1, transcribed off a transgene, is sufficient to reduce CNS degeneration but does not explicitly teach administering this protein as encompassed by claims 8 – 11, as the protein is endogenous to the transgenic mice.

It would have been obvious to one of ordinary skill in the art to adjust the concentration of MT-2 administered by Penkowa. Changing the concentration of a composition is not supportive of patentability (MPEP § 2144.05(II)(A)). As Penkowa teaches a method according to claims 6 – 7 that differs only in that the prior art does not disclose the actual concentration of the composition, and altering the concentration of the active ingredient would have been obvious to one of ordinary skill in the art, claims 6 – 7 are unpatentable over Penkowa. The motivation to alter the concentration of the active ingredient would be to find a volume of injection suitable for the patient.

It also would have been obvious to one of ordinary skill in the art to coadminister MT-1 along with MT-2, with a reasonable expectation of success. The motivation to do so would be to provide additional neuronal protection. The reasons why claims 10 – 12 are included in this rejection are set forth in the previous office action.

This rejection stands for the reasons previously made of record. Applicant did not separately traverse the examiner's determinations that the limitations recited in claims 6 - 12 would have been obvious to one of ordinary skill in the art, but rather argued that Penkowa does not anticipate claim 1. As set forth in the rejection under 35 USC 102/35 USC 103 above, the rejection of claims 1 - 2, 4, and 13 stands.

6. Claims 1 – 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Penkowa (2002. Journal of Comparative Neurology 444(2):174-189) in view of FR 2813529, cited on IDS filed 13 December 2004.

The reasons why claims 1 – 2, 4, and 6 – 13 are anticipated by or obvious over Penkowa are set forth above. Briefly Penkowa teaches administration of MT-IIA is protective of neurons, and teaches compositions comprising MT-IIA. Penkowa suggests that metalliothioneins can be used in treating CNS diseases (p. 187 end of first column). However Penkowa used rabbit metallothionein, and does not teach administration of human MT-IIA as recited in claims 3 and 5.

FR 2813529 teaches compositions comprising human MT-IIA, which are on point to claims 3 and 5. However '529 publication does not teach administering the compositions such that target neurons or neuronal areas are exposed to the MT-IIA-containing compositions.

It would have been obvious to one of ordinary skill in the art to modify the methods of Penkowa to use the human MT-IIA taught in '529 publication, with a reasonable expectation of success. The motivation to do so would be to ensure less of an immune response when treating human patients. The artisan would be motivated to make this substitution, thereby arriving at the invention of claims 3 and 5, because the human MT-IIA sequence was known in the art and shown by '529 publication to be suitable for administration to humans, and because the artisan of ordinary skill would immediately understand that using a protein from a foreign species would increase the likelihood of an adverse immune reaction.

This rejection stands for the reasons previously made of record. Applicant did not separately traverse the examiner's determinations that the limitations recited in claims 3 and 5 would have been obvious to one of ordinary skill in the art given the teachings of the '529 publication, but rather argued that Penkowa does not anticipate claim 1. As set forth in the rejection under 35 USC 102/35 USC 103 above, the rejection of claims 1 - 2, 4, and 13 stands.

7. Claims 1 – 2, 4, 6 – 13, and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Penkowa (2002. Journal of Comparative Neurology 444(2):174-189) in view of Asanuma (2002. Neuroscience Letters 327:61-65; available online 21 April 2002).

The reasons why claims 1 – 2, 4, and 6 – 13 are anticipated by or obvious over Penkowa are set forth above. Briefly Penkowa teaches administration of MT-IIA is protective of neurons, and teaches compositions comprising MT-II, which is either the same as or an obvious

variant of MT-IIA. Penkowa suggests that metalliothioneins can be used in treating CNS diseases (p. 187 end of first column). However Penkowa does not explicitly teach a method of treating Parkinson's disease by administering metallothioneins as encompassed by claim 15.

Asanuma teaches that mice which lack both MT-I and MT-II are exceptionally susceptible to the toxic effects of 6-OH dopamine. See for example Figure 1, top panels. 6-OHDA is a chemical used to kill dopaminergic neurons, and administration of 6-OHDA is an art accepted animal model of Parkinson's disease. Asanuma teaches that the results indicate that both MT-I and MT-II have neuroprotective effects for Parkinson's (see p. 63 final paragraph), and suggest that the protective effects of these proteins are consistent with their known free-radical-scavenging roles. However Asanuma does not explicitly teach administering MT-IIA for treatment of Parkinson's disease as recited in claim 15.

It would have been obvious to one of ordinary skill in the art to administer MT-IIA, as taught by Penkowa, for treatment of Parkinson's disease, as suggested by Asanuma. The motivation to do so would be to effectively treat the disease. It would be reasonable for the artisan of ordinary skill to expect success, as Asanuma teaches that the lack of MT-I and MT-II leads to increased likelihood of death of dopaminergic neurons, the cause of Parkinson's disease, in the presence of certain toxins. Additionally Asanuma teaches the free-radical scavenging properties of these proteins, and teaches how these properties would be helpful in treatment of Parkinson's.

This rejection stands for the reasons previously made of record. Applicant did not separately traverse the examiner's determinations that the method of claim 15 would have been obvious to one of ordinary skill in the art given the teachings of both Penkowa and Asanuma, but rather argued that Penkowa does not anticipate claim 1. As set forth in the rejection under 35 USC 102/35 USC 103 above, the rejection of claims 1 - 2, 4, and 13 stands. The rejection of claim 15 stands for the reasons previously made of record.

8. Claims 1 – 2, 4, 6 – 14, and 16 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Penkowa (2002. Journal of Comparative Neurology 444(2):174-189) in view of Walsh (US Patent Application Publication 2002/0155170, published 24 October 2002, filed 30 November 2001, claiming benefit of a provisional application filed 30 November 2000).

The reasons why claims 1 – 2, 4, and 6 – 13 are anticipated by or obvious over Penkowa are set forth above. Briefly Penkowa teaches administration of MT-IIA is protective of

neurons, and teaches compositions comprising MT-II, which is either the same as or an obvious variant of MT-IIA. Penkowa suggests that metalliothioneins can be used in treating CNS diseases (p. 187 end of first column). However Penkowa does not explicitly teach a method of treating Alzheimer's disease by administering metallothioneins as encompassed by claim 14 or treatment of motor neuron disease as recited in claim 16.

Walsh teaches that Alzheimer's disease (AD) is likely caused by a metallothionein disorder; see paragraphs [0118] – [0119]. Specifically, Walsh teaches that the plaques associated with AD result from free Cu and Zn ions, and that these plaques as well as the symptoms of AD will be ameliorated by metallothioneins. Walsh also teaches that familial amyotrophic lateral sclerosis symptoms worsen when metallothionein levels decrease (paragraph [0120]); this is a specific type of motor neuron disease. Walsh teaches and claims administration of a pharmaceutical composition which increases the amount of metallothioneins for treatment of Alzheimer's disease and the motor neuron disease familial amyotrophic lateral sclerosis, which is on point to instant claims 14 and 16 (see Walsh paragraph [0120] and claims 42 – 43). However Walsh does not teach administering MT-IIA for treatment of Alzheimer's disease as recited in claim 14 or for treatment of motor neuron disease.

It would have been obvious to one of ordinary skill in the art to administer MT-IIA, as taught by Penkowa, for treatment of Alzheimer's disease and the motor neuron disease, as suggested by Walsh. The motivation to do so would be to effectively treat the diseases.

This rejection stands for the reasons previously made of record. Applicant did not separately traverse the examiner's determinations that the method of claims 14 and 16 would have been obvious to one of ordinary skill in the art given the teachings of both Penkowa and Walsh, but rather argued that Penkowa does not anticipate claim 1. As set forth in the rejection under 35 USC 102/35 USC 103 above, the rejection of claims 1 - 2, 4, and 13 stands. The rejection of claims 14 and 16 stands for the reasons previously made of record.

Rejections Necessitated by Amendment

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 – 13 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of increasing axonal growth following administration of MT-IIA, does not reasonably provide enablement for "a method of stimulating regenerative growth" as recited in claim 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

There are many factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is undue. These factors include, but are not limited to: 1) nature of the invention, 2) state of the prior art, 3) relative skill of those in the art, 4) level of predictability in the art, 5) existence of working examples, 6) breadth of claims, 7) amount of direction or guidance by the inventor, and 8) quantity of experimentation needed to make or use the invention. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (FED. Cir. 1988).

In this case, the nature of the invention is complex in that it encompasses regeneration of neurons. Claim 1 is broad because it is not limited to methods of promoting outgrowth of damaged axons, for example, but rather encompasses the full scope of "stimulating neuronal regenerative growth". This encompasses bringing dead cells back to life, anywhere within the central nervous system or peripheral nervous system. The examiner concedes that it is within the skill of the artisan to administer MT-IIA as recited in claim 1, but the full scope of the claimed method cannot be achieved in the absence of undue experimentation.

Claim 1 encompasses regeneration of neurons. The term "neuronal regenerative growth" is not explicitly defined in the specification. The broadest reasonable interpretations of this term include rebirth of dead neurons, and complete replacement of neurons which have died. At the time the invention was made, this was generally recognized in the art to be impossible, particularly in the central nervous system. See for example Fry (2001. "Central Nervous System Regeneration: Mission Impossibe?" Clinical and Experimental Pharmacology and Physiology 28:253-258). Note that Fry teaches that "[t]he adult mammalian central nervous system (CNS) does not regenerate following injury or insult." (first sentence of the text). The review article goes on to discuss the obstacles to regeneration, and notes that this is a particularly complex field (see p. 254 first column). While a certain degree of regrowth of damaged axons was recognized as being possible, complete regeneration is recognized to be impossible. Additionally, Schwob (2002. The Anatomical Record (New Anat.) 269:33-49)

teaches that neurons generally do not regenerate. An exception, according to Schwob, is the receptive olfactory neurons (which are part of the peripheral nervous system, not the central nervous system). Schwob discusses the special properties of these neurons, but indicates that their regenerative abilities are generally not shared by neurons in the CNS.

The specification fails to provide working examples or guidance to the skilled artisan as to how to overcome these art-recognized obstacles. The specification provides examples of axon regrowth (see for example p. 3 lines 13 – 14, p. 7 lines 20 - 24) in damaged tissue, which is consistent with the teachings of Fry. That is, the specification discloses no more than the prior art with respect to inducing any "neuronal regenerative growth": regrowth of injured axons can occur, but complete regeneration of dead tissue cannot. As the specification fails to show actual working examples commensurate in scope with promoting "neuronal regenerative growth" and fails to provide the skilled artisan with adequate guidance as to how to overcome this art-recognized barrier, the artisan would have to resort to a very large degree of experimentation in order to determine how to practice the full scope of the claimed invention. Coupled with the paucity of disclosure and guidance, the skilled artisan would have to resort to an undue degree of experimentation in order to practice the invention of claim 1 over its full scope. Thus claim 1 is properly rejected for lack of enablement commensurate in scope with the claims. Claims 2 – 13 are rejected as they depend from claim 1 but are not limited to embodiments which could be practiced by the skilled artisan in the absence of an unduly large degree of experimentation.

Conclusion

10. No claim is allowed.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL KOLKER whose telephone number is (571)272-3181. The examiner can normally be reached on Mon - Fri 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Stucker can be reached on (571) 272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel E. Kolker, Ph.D./
Patent Examiner, Art Unit 1649
April 24, 2008